

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C. 20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 21 March 2000 (21.03.00)	
<b>International application No.</b> PCT/US99/18222	<b>Applicant's or agent's file reference</b> 22171.143
<b>International filing date (day/month/year)</b> 11 August 1999 (11.08.99)	<b>Priority date (day/month/year)</b> 17 August 1998 (17.08.98)
<b>Applicant</b> GUO, Ning et al	

1. The designated Office is hereby notified of its election made:

☒

in the demand filed with the International Preliminary Examining Authority on:

19 January 2000 (19.01.00)

☐

in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was☐

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b>  S. De Michiel  Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

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NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

MCCOMBS, David, L.  
Haynes and Boone, L.L.P.  
Suite 3100  
901 Main Street  
Dallas, TX 75202-3789  
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year) 05 July 2000 (05.07.00)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference 22171.143	
International application No. PCT/US99/18222	International filing date (day/month/year) 11 August 1999 (11.08.99)

1. The following indications appeared on record concerning:

☒ the applicant    ☐ the inventor    ☐ the agent    ☐ the common representative

Name and Address NORTEL NETWORKS CORPORATION World Trade Center of Montreal 8th Street 3800 St. Antoine Street West Montreal, Quebec H2Y 3Y4 Canada	State of Nationality CA	State of Residence CA
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person    ☒ the name    ☐ the address    ☐ the nationality    ☐ the residence

Name and Address NORTEL NETWORKS LIMITED World Trade Center of Montreal 8th Street 3800 St. Antoine Street West Montreal, Quebec H2Y 3Y4 Canada	State of Nationality CA	State of Residence CA
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office    ☐ the designated Offices concerned  
☐ the International Searching Authority    ☒ the elected Offices concerned  
☐ the International Preliminary Examining Authority    ☐ other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer  Beatriz Morariu Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 23 MAY 2000

WIPO

PCT

Applicant's or agent's file reference 22171.143	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/18222	International filing date (day/month/year) 11 AUGUST 1999	Priority date (day/month/year) 17 AUGUST 1998
International Patent Classification (IPC) or national classification and IPC IPC(7): H04L 13/10, 12/54 and US Cl.: 370/465,466		
Applicant NORTEL NETWORKS CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 19 JANUARY 2000	Date of completion of this report 30 MARCH 2000
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer ANDREW LEE <i>Joni Hill</i> Telephone No. (703) 305-1500

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/18222

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☒ the description:  
pages 1-12 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages 13-16 , as originally filed  
pages NONE , as amended (together with any statement) under Article 19  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the drawings:  
pages 1 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the sequence listing part of the description:  
pages NONE , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

5. ☒ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/18222

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

Novelty (N)

Claims	<u>1-21</u>	YES
Claims	<u>NONE</u>	NO

Inventive Step (IS)

Claims	<u>1-21</u>	YES
Claims	<u>NONE</u>	NO

Industrial Applicability (IA)

Claims	<u>1-21</u>	YES
Claims	<u>NONE</u>	NO

**2. citations and explanations (Rule 70.7)**

Claims 1-21 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest the communication between first and second nodes wherein the plurality of frames comprising the frame structure including a ARQ block with first bit length, FEC with second bit length, physical layer frame with third bit length and interleaver block with fourth bit length and wherein the first, second and fourth bit lengths are each different bit lengths.

With respect to Claims 1-10, Darmon et al (US patent Number 5,313,473) teaches digital data transmission with automatic repeat request with the block COM prior to encoding (see col 4, lines 1 +). In view of the Darmon et al singularly or in combination with Reed et al (US patent Number 4,939,731) fails to disclose the frame structure which provides a hierarchical configuration of elements that support sub-frame operation.

With respect to Claims 5-12, Ayanoglu (US patent Number 5,719,883) teaches an adaptive ARQ/FEC technique for multitone transmission wherein the process causes the retransmission of additional parity checking bits for correcting transmission error in a transmission block, if the transmission error detected in a transmission block are not correctable by FEC using the originally transmitted parity bit. In view of Ayanoglu singularly or in combination with Hagiwara et al (US Patent Number 5,629,948) fails to disclose the FEC block being subdivided by plurality of one or more ARQ blocks wherein each ARQ blocks includes plurality of information bits and overhead bits.

With respect to Claims 13-21, Crisler et al (US Patent Number 5,477,550) teaches communicating data using a modified SR-ARQ protocol. However, Crisler et al fails to disclose the FEC block being subdivided by plurality of one or more ARQ blocks wherein each ARQ blocks includes plurality of information bits and overhead bits.

----- NEW CITATIONS -----  
NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/18222

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**I. BASIS OF REPORT:**

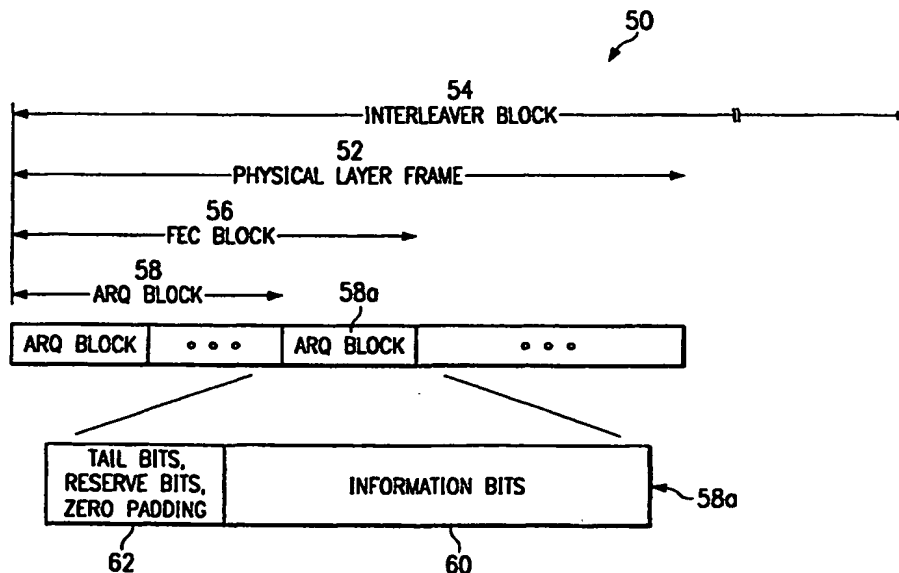
5. (Some) amendments are considered to go beyond the disclosure as filed:  
NONE



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : <b>H04L 13/10, 12/54</b>		A1	(11) International Publication Number: <b>WO 00/10298</b>
			(43) International Publication Date: 24 February 2000 (24.02.00)
(21) International Application Number: PCT/US99/18222 (22) International Filing Date: 11 August 1999 (11.08.99) (30) Priority Data: 60/096,886                      17 August 1998 (17.08.98)                      US (71) Applicant (for all designated States except US): NORTEL NETWORKS CORPORATION [CA/CA]; World Trade Center of Montreal, 8th Street, 3800 St. Antoine Street West, Montreal, Quebec H2Y 3Y4 (CA). (72) Inventors; and (75) Inventors/Applicants (for US only): GUO, Ning [CA/CA]; 32 Mullcraft Crescent, Nepean, Ontario K2J 4P8 (CA). FONG, Mo-Han [CA/CA]; Apartment 510, 700 Gaspé, Verdun, Quebec H3E 1H2 (CA). GUTIERREZ, Alberto [US/US]; 2904 Bellerie Drive, Plano, TX 75025 (US). TONG, Wen [CA/CA]; 903-1000 Castlehill Cres., Ottawa, Ontario K2C 3L7 (CA). (74) Agents: MCCOMBS, David, L. et al.; Haynes and Boone, L.L.P., Suite 3100, 901 Main Street, Dallas, TX 75202-3789 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  Published With international search report.	

(54) Title: A FLEXIBLE FRAME STRUCTURE FOR A CDMA WIRELESS NETWORK



## (57) Abstract

A flexible frame arrangement for a CDMA wireless communications network is disclosed. A signal for transmission in the network includes several frames for transferring data between network nodes. At least one of the frames includes a hierarchical sub-frame structure having a physical layer frame (52) and an interleaver block (54), a forward errors control FEC block (56), and an automatic repeat request ARQ block (58). The sub-frame arrangement may be used in a spread spectrum wireless network such as CDMA2000 or W-CDMA. The FEC blocks transmit error control information and are subdivided into one or more of the ARQ blocks. Each ARQ block includes information bits and overhead bits such as cyclic redundancy code CRC bits and zero bits.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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EE	Estonia	LR	Liberia	SG	Singapore		



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/18222

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : H04L 13/10, 12/54

US CL : 370/465,466

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/465,466

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
frame structure

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,313,473 A (DARMON et al) 17 May 1994, col. 1, lines 10-64 and col. 3, lines 15-65	1-10
Y	US 4,939,731 A (REED et al) 03 July 1990, col. 4, lines 1-68 and col. 5, lines 1-68	1-10
Y	US 5,719,883 A (AYANOGLU) 17 February 1998, col. 1, lines 38-64 and col. 14, lines 10-60	5-12
Y	US 5,629,948 A (HAGIWARA et al) 13 May 1997, col. 1, lines 15-68 and col. 6, lines 1-65	5-12
Y	US 5,477,550 A (CRISLER et al) 19 December 1995, col. 3, lines 20-63 and col. 4, lines 10-68	13-21
Y	US 5,600,663 A (AYANOGLU et al) 04 February 1997, col. 1, lines 11-68 and col. 4, lines 5-65	13-21

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*B* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

15 OCTOBER 1999

Date of mailing of the international search report

18 NOV 1999

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